# ON SCENE

U.S. Department of Transportation

**United States Coast Guard**

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# ON SCENE

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***COVER:*** *As part of the "rescue team", a Coast Guard surface swimmer, deployed from a 41' UTB, maintains his hold on a victim while being retrieved by a fellow crew member. See "Rescue Swimmers" article, page 6.*


*ON SCENE is a quarterly, authorized, special interest publication, produced by the Office of Navigation, Safety and Waterway Services for members of the U.S. Coast Guard and the SAR community. Editorial content is not to be considered as authority for official action, nor as record material. Individual views and opinions expressed do not necessarily reflect those of the Department of Transportation or the U. S. Coast Guard.*

CHIEF, OFFICE OF NAVIGATION SAFETY
AND WATERWAY SERVICES
UNITED STATES COAST GUARD
WASHINGTON, D.C. 20593-0001

Dear "On Scene" Readers,

As you enjoy this issue, old man Winter has finally lost his grip and Spring has come to most areas of the country. With this change of seasons comes the annual increase in recreational boating resulting in heightened SAR operations. Some of you have no off-season; others are already hard at work maintaining resources or conducting pre-season training. It will not be long before the summer rush is on to our waterways and beaches.

As always, I am very pleased with your performance and continued dedication to saving life and property. Your efforts are greatly appreciated by all who use the water for recreation or to earn a living. My hat's off to you, the Search and Rescue Community, for your professionalism and operational readiness. Keep up the good work and have a safe and rewarding season.

Sincerely,

Robert T. Nelson

ROBERT T. NELSON
Rear Admiral, U.S. Coast Guard

# Letters to the Editor

Dear ON SCENE Editor,

In reference to "Lessons to be Learned" in your issue 2/89, concerning the lack of 121.5/2403.0 Mhz DF capabilities aboard 110 WPBs' a handheld, portable DF is available for reasonable cost. You can buy either the 121.5 DF or a unit which will receive both 121.5 and 243.0 Mhz.

Operation is easy, although range is limited due to reception being line-of-sight. Still, we have used the unit several times, and found it accurate enough to locate an inadvertently transmitting EPIRB inside a storage shed along a crowded waterway. It is of enormous value when faced with finding an EPIRB among vessels at a crowded marina or tracking down an ELT at your local airport.

Many Districts/Groups have procured these DFs for their stations, bases, and WPBs. It is a great investment for units without ELT/EPIRB DF capabilities.

Sincerely,
LT J. C. HOWE
USCGC METOMPKIN (WPB 1325) Charleston, SC

*Editors Note: G-NRS-3 has purchased and is in the process of delivering portable DF's to all District's (osr) for further distribution.*

---

Dear ON SCENE Editor,

As a former Coxswain "C" School instructor and qualified underway OOD on two patrol boats, I have difficulty with the concept of the "TOWING IN STEP" article published in the 2/89 issue.

I'm all for anything that makes the boat operator's job easier, but I think we can go too far! A seaman's eye is the most valuable, reliable tool a boat operator has. If I am going to tow a vessel in heavy seas, I know that I need a much longer scope of towline than if I were towing a vessel in light seas. Once my towline is payed out, I make adjustments based on the conditions. I find it hard to believe that a formula of any kind will eliminate the need for adjustments. The primary reason for parting a towline is excessive speed not being out of step.

In the event of a weather change, do I go back to the formula or do I use my seaman's eye to try and keep my tow in step? In the scenario of a confused sea state, should I use my seaman's eye or do I use a formula to get my tow in step? Is there a formula for a following or quartering sea or do I rely on my seaman's eye? Does this formula work if a 41' UTB is towing a large fishing vessel when both boats ride and react very differently to the seas?

I am a firm believer in the seaman's eye. There are times that we as boat operators can put too much trust and emphasis on theory and technology. Loran and radar are superb tools of the trade, but they alone will not prevent us from going aground or being in a collision. We must use our seaman's eye in conjunction with this equipment to successfully navigate. Seamans eye, common sense and prudent seamanship is the key to all evolutions.

BM1 Stephen M. Ryan
USCG Station Jonesport
Jonesport, ME

COMMANDER
U.S. COAST GUARD PACIFIC AREA
COAST GUARD ISLAND
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9 March 1990

Commandant (G-MRS-2)
Editor, ON SCENE
U.S. Coast Guard Headquarters
2100 Second Street, S.W.
Washington, D.C. 20593

Dear Editor:

In the latest edition of ON SCENE, COMDTPUB P16100.4, an article entitled "Boat Crew Professionalism" discussed the need for senior petty officers to be active coxswains at our shore stations. I certainly support that contention. There are times, however, when the best coxswains may not be the senior ones. On numerous occasions in the past, the more senior petty officers at stations have reported aboard with no real experience in small boats. When this happens, the CO/OINC is faced with a dilemma--should he/she put the best in the boat or the most senior? The CO/OINC has to make the decision on a case by case basis but he should spare no effort to get the senior petty officer trained. That's easy to say, but with the continual addition of administrative workload at these small units, we've provided a challenge to the CO/OINC. It's the senior petty officers who do the paperwork.

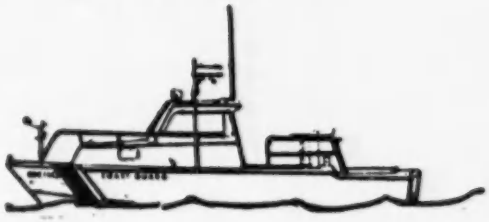
We need to make every effort possible to relieve the stations of these huge burdens that detract from the business of being professional boat drivers. Believe me, these administrative chores are almost overwhelming.

Sincerely,

CLYDE E. ROBBINS
Vice Admiral, U.S. Coast Guard

***Editors note:*** **Thank you Admiral for taking time to express your concerns... We couldn't agree with you more!**

# Boat Crew Professionalism



**By: CWO Jake Miller, G-NRS-2**

In this issue I would like to discuss our boat crew training system. Given there is always room for improvement, but I would argue that some of the perceived imperfection in the system is attributable to operator error. It can't come as a complete shock to all of you that the boat crew training system, like all systems, is only as good as the people (boat crewmen, OIC's, CO's, group commanders and operations officers, and district commanders and their staffs) implementing it.

Now that we've established who's responsible (is there anything you're not responsible for?), let's discuss the system and your interaction with it. First, before we go any further, we should establish why we have a training system. The driving force of any system should be its purpose. If the purpose is not clearly defined the rest of the system will be awkward and produce indeterminate results. As I see it, the purpose of the boat crew training system is to provide the Coast Guard with the very best boat operators possible. It does this by defining boat crew positions and providing standards and procedures for becoming qualified, certified, and maintaining certification in each position. In addition it provides guidance for management of the system.

The different aspects of the system used to accomplish its purpose are spelled out in seven interrelated manuals. These are the Boat Crew Seamanship Manual, the Boat Crew Training Manual, the four Boat Crew Qualification Manuals, and the Station "Ready For Ops" Evaluation Program.

The first of these, the Boat Crew Seamanship Manual, is the basic reference for boat crewmen. It describes the standard skills, knowledge, and procedures used by boat crewmen to accomplish their various tasks.

The Boat Crew Training Manual delineates procedures for managing the system. It defines some common terms used within the system (if you still don't know the difference between qualification and certification, this is where you find it). It tells the responsibilities and interrelationship of different players in the system (have you read this to see what your responsibilities are?). It also provides the procedures for becoming qualified, certified, and for remaining current. All three of these aspects are important so let's go over them.

Qualification is the procedure used for standardizing the training of prospective crew members. It ensures that each crew member has been trained, up to a specific standard, in those basic procedures necessary to their crew position. Certification is the procedure a unit CO uses to validate the qualification process. Because a unit's CO is responsible for the use, maintenance, and safety of the unit's boats, he or she has the last say over who is going to operate the boats attached to their command. This is why certification, unlike qualification, is only good for the unit that grants it.

The other aspects, described in the Boat Crew Training Manual, are the concept of currency and the documentation requirements of the system. Currency is, as the manual says, "the minimum annual requirements for all certified boat crew personnel." But I see this as much more than just something you have to do or you'll loose your certification. These requirements are the system's way of ensuring that you (here we go again) get **underway**; that you not only don't forget your skills, but you spend a minimum amount of time practicing them.

They are designed so that the crewman who spends a fair amount of each semiannual period underway will not have to spend much dedicated time to remain current. Conversely, they are also designed so that person who does not get underway a sufficient amount will have to dedicate some time to maintaining their skills and local knowledge. If they don't, then they will no longer be certified to operate Coast Guard boats. Because of this, it is hard for me, personally, to understand commanders who, citing limited operations as justification, grant blanket waivers to units who do not comply with all parts of this COMDTINST. The point is to maintain skills, not harass. People assigned to units with limited operations because of short seasons,

light case loads, whatever, are precisely the units that need to get underway the most for dedicated training. Even if it means gearing up extensively at the beginning and end of each season.

The Boat Crew Qualification Guides, Crewman, Engineer, Coxswain, Surfman, describe the basic skills (tasks) necessary for qualification for each crew position in each boat type. Contained in each task are the procedural steps necessary to complete the task, the conditions under which the task must be done, and the standard indicating the quality necessary to accomplish the task. An important distinction of this program is the general standard, that all trainees must meet, of being able to repeat each task unsupervised (these manuals also include study guides to help trainees attain the knowledge necessary for task completion).

The final part of the system is the Station "Ready For Ops" Evaluation Program. This manual is used by CO's, district and group commanders, and the two boat standardization teams to, among other things, evaluate and validate a station's efforts in this system. It is a good basic tool for measuring the effectiveness of station boat crew training.

It probably won't fit in a nut shell, but there, briefly, is the boat crew training system from where I sit. As always, your comments on this column or any other subject of mutual interest are solicited and appreciated. I'm still located at COMDT (G-NRS-2) and my phone number remains (202) or FTS 267-2868.

# Resources For Underwater SAR

**By: LCDR F. L. Bradham, G-NRS-1**

Federal law mandates the Coast Guard to be responsible for developing, maintaining and operating facilities for the promotion of safety UNDER, as well as on and over the high seas and waters subject to the jurisdiction of the United States. How many times do we have a search and rescue case UNDER the sea? Incidence of underwater cases is low, but unusual cases involving persons trapped in capsized boats and sunken vehicles have occurred during this past year.

How Coast Guard and other rescue organizations responded to these cases varied widely. The types of resources necessary to respond to a subsurface distress are very case dependent. The Coast Guard has no special equipment or trained personnel to handle underwater distress, and often must call for outside assistance.

This old adage is very true in underwater SAR, "I don't need it now, but when I need it, I need it now!" When a case does occur the time of response and the proper response is most critical. Where do you find divers to respond to a case of persons trapped in a capsized boat? Where do you find a manned submersible or any remote operated vehicle capable of searching for a sunken commercial submarine? Who do you contact in the event we need to locate a sunken aircraft with a "pinger" on board?

The U. S. Navy is the primary source of expertise and resources for complex underwater SAR cases. The Naval Sea Systems Command Supervisor of Salvage maintains a world wide network of commercial contractors as well as the regular Navy resources available for underwater salvage, survey, and search and rescue operations.

Other potential resources include those used by the National Undersea Research Program (NURP) of the National Oceanic and Atmospheric Administration (NOAA). The NURP and their associated research institutions conduct research in many areas of the world using manned submersibles and remote operated vehicles (ROV). NURP contracts with several commercial manned submersible and ROV operators, and therefore, could possibly identify resources in the event of an emergency.

Local resources should be considered in underwater distress. Coast Guard commands should identify the diving resources available within their area of responsibility. In many cases, state and local governments have access to trained divers for search

and recovery and these resources may prove valuable in a rescue situation. Remember, the Coast Guard does not maintain diving resources so keep your resource list up to date. When you have someone trapped under water, time does not allow us to hunt for possible responders.

Aircraft downed in even moderate or shallow water are difficult to find and searching uses considerable time and resources. Aircraft with Underwater Acoustic Beacons, commonly called a "pinger", make location much easier. A pinger emits a sound which can be detected by locator system equipment. The Navy Supervisor of Salvage also has personnel and "pinger" locator equipment available to search for sunken aircraft. "Pingers" may also prove useful in the event of trapped personnel in a capsized vessel if there is a good probability of the vessel sinking. A "pinger" can be obtained from any Coast Guard or US Navy air station and attached to the vessel so in the event the vessel does sink it then can be found.

The appropriate emergency contact for Rescue Coordination Centers to obtain US Navy assistance is the Navy Department Duty Captain at the Pentagon, telephone (202) 695-0231 or Autovon 225-0231. The Duty Captain Desk will arrange resources with the Naval Sea Systems Command Supervisor of Salvage, or the appropriate fleet command depending on the location of the distress and the resources needed. If you wish general information on Navy undersea rescue resources you may call the office of Supervisor of Salvage at (202) 697-7403. If you wish to find what manned submersible or ROV contractors may be operating in your area of responsibility you may contact the National Undersea Research Program during normal working hours at (301) 443-8391.

This issue of On Scene also contains an article by CWO Steve Seybold regarding Coast Guard rescue swimmers. As Mr. Seybold explains, Coast Guard rescue swimmers are not trained, equipped, or teamed to conduct dive operations. Therefore, SAR operation commanders must ensure there is an established procedure of who and when we call when a case needs divers or underwater equipment.

Further information on resources and procedures for underwater SAR will be included in the new Coast Guard Addendum to the National Search and Rescue Manual this Spring. Other informative directives on this subject are: Coast Guard Diving Policies & Procedures (COMDTINST M10560.4 series), Coast Guard Helicopter Rescue Swimmer Operations Manual (COMDTINST M3710.4 series), Coast Guard Cutter Rescue Swimmer Instruction (COMDTINST 16134.1 series), and USN SUBMISS/SUBSUNK Instruction on Rescue Response to Noncombantant Submersibles (NAVSEAINST 4740.1 series).

# Rescue Swimmers

By: CWO Steve Seybold, G-NRS-2

Recent cases involving rescue swimmers and capsized vessels have prompted my concern as to how swimmers are visualized and utilized.

Much to the confusion of unit commanders, various policies or lack of policies, also exist within the Coast Guard regarding the deployment of helicopter rescue and surface swimmers.

There are three distinct categories of swimmers in the Coast Guard; helicopter rescue swimmers, cutter swimmers, and swimmers deployed from boats. Each category's capability, training, and equipment is different.

Helicopter rescue swimmers are highly trained and conditioned individuals, deployed from helicopters to assist incapacitated personnel in the water. They are equipped to function in heavy seas for 30 minutes and have the skills to provide basic pre-hospital life support for the rescued individual(s). While they operate as part of a flight crew, once deployed they function, untethered, on their own. If deployed to a capsized or submerged object, the helicopter rescue swimmer is permitted to visually search and reach inside from the exterior of the object. They are neither trained nor expected to dive under or into capsized or submerged vessels, aircraft, or vehicles. If it is determined a person is trapped in or under such an object, the aircraft commander must request alternative assistance through the search mission coordinator or operations center. This restrictive guidance is provided to prohibit on scene actions that the helicopter rescue swimmer is not trained, equipped, nor "teamed" to safely accomplish.

Cutter swimmers are deployed from a cutter or the cutter's boat to assist personnel in the water. Like the helicopter rescue swimmer, they are trained and equipped, but to a lesser degree. Some cutter swimmers may have been provided formal training conducted by one of the Navy's Surface Rescue Swimmer schools. Others may receive training in advanced lifesaving via Red Cross courses. Unlike the helicopter rescue swimmer, cutter swimmers are not meant or intended to act on their own. These swimmers, when deployed, are tethered by means of a harness and line. A second swimmer may also be deployed to assist but, as a minimum, is "dressed-out" and available on deck should problems arise. Once a victim is controlled, both the swimmer and victim are retrieved by a line-tender aboard the ship or boat. Like the helicopter rescue swimmer, cutter swimmers are neither expected nor required to enter capsized hulls, airframes and submerged vehicles. They may not conduct diving operations. In many cases, time permitting, it may be advantageous to deploy the cutter's boat to effect retrieval of personnel in the water.

Since, most boats used by the Coast Guard are designed to retrieve personnel directly from the water, swimmers are often not needed. Formal training is encouraged but rarely received by these swimmers. Like the cutter swimmer, the swimmer deployed from a boat is tethered and retrieved by personnel aboard the boat. This alone can cause problems. Since boat crews are limited in size, a backup swimmer is generally not available. Although little written policy or guidelines exist regarding surface swimmers deployed from boats, they are neither trained, equipped, nor expected to conduct operations involving diving, or entering submerged or capsized vessels, aircraft, or vehicles.

Does the responding resource commander or swimmer have the knowledge or judgement to decide whether a swimmer should enter the water? Sometimes. Motivation and on scene initiative must not, however, be allowed to overshadow sound professional judgement. It is difficult, if not impossible, to judge the unseen risks of entering submerged or capsized objects. Thus, the aforementioned policies regarding swimmer deployment. The primary objective of any rescue involving a person in the water is the safe and expeditious retrieval of that person from the water. This may or may not always involve the use of a swimmer.

Recent cases involving units encountering capsized vessels provide a good opportunity to review the decision making process and factors involved in the cases.

A 41' UTB and a rigid hull inflatable boat, responding to a call from the local police, arrived on scene to find an overturned 25 foot cabin cruiser located approximately 1/4 mile off the beach, outside the surf line, in 10 to 12 foot swells. Two persons were clinging to the inverted hull. A BM3 and a SN were detailed as swimmers and deployed from the vessels. Upon recovering the two persons outside the boat, the crews learned a woman and child were trapped inside the boat's cuddy cabin. A request for assistance from the local police diving unit was made. The swimmers spent about 25 minutes talking to the woman through the hull and evaluating the situation. The trapped woman estimated she had about 5 minutes of air left. Believing the SCUBA rescue team would take more than 15 minutes to arrive, the two swimmers decided to pull woman and child out. The SN removed his vest and harness, and put on a dive mask. He reached inside the inverted vessel, never surfacing inside it, and successfully pulled the child from the cabin, carrying him to the surface. While retrieving the woman from the cabin, one of her feet got caught on the helm causing both the victim and the swimmer to panic. The swimmer managed to free the woman and shove her clear of the vessel. She floated to the surface where the BM3 assisted her and the child onto the UTB.

Through the heroic efforts of the swimmers, retrieval of the trapped persons was successfully executed. Rare circumstances, however, were involved. Two swimmers with some experience were available...the BM3 was a graduate of the Navy's Surface Rescue Swimmer School, and the SN had previously worked as a pool lifeguard. With two swimmers in the water, verbal communications established with the trapped persons, and a careful assessment of the situation by both swimmers, it was possible to plan and coordinate the extraction of the persons trapped within the vessel. Neither swimmer actually surfaced inside the vessel but, through a coordinated effort, reached in and pulled both victims free of the vessel.

In another case, a 38 foot sport fisherman capsized while entering an inlet. When the UTB arrived on scene, several survivors reported a 14 year old boy missing. The UTB chose not to deploy a swimmer and requested a civilian SCUBA team. During the SCUBA team's investigation of the boat, one diver became so entangled he had to remove his tank and leave it on the boat. The missing boy was never located.

This case it illustrates the potential for disaster. Again, good judgement was used. Had a swimmer been deployed from the boat and subsequently become entangled, would it have been possible to retrieve him? Probably not. The on scene resource evaluated the situation and chose to use an alternate, more qualified means of investigating the vessel.

Swimmers do play an important role in waterborne rescue teams. This, however, does not mean a swimmer must be deployed every time a person is in the water. The decision process for employment of the swimmer to assist a person in the water will, more than likely, involve many circumstances. Factors which must be considered prior to swimmer deployment include, but are not limited to, the survivor's condition, environmental circumstances on scene, the need for a swift recovery, the swimmer's own capability, and whether the rescue can be effected by a better means (i.e., direct pickup by means of boat or hoist). Each situation must be evaluated individually. The decision to deploy a swimmer, whether from a helicopter, a cutter, or a boat, must be thoroughly discussed by the rescue team...the final decision to deploy being left to the swimmer. Persons detailed as swimmers must realize their own limitations and operate within them.

# SARMIS Notes

**By: LTJG Patrick Geddes, G-NRS-1**

---

There still seems to be some confusion with the SAR Mission Coordinators (SMC's) reports, despite repeated announcements. When SARMIS presents screen A03, asking the SMC to enter the time notified, the correct answer is the time the FIRST unit was notified of the incident. Too often, the SMC's are erroneously entering the time they were notified, even if another unit received the call first. The A03 screen specifically requests the time the FIRST unit was notified. Every time this is ignored, somebody must correct ALL the reports in that case. This only creates extra work which could be used more productively in other pursuits.

Many District and Area SAR Data Coordinators are having trouble getting SMC reports from units. The SAR Mission Coordinator must submit an SMC report whether or not they are claiming a sortie for that case. If a sortie is claimed by the SMC, both reports, the SMC and the sortie report, must be printed to paper or to floppy disk.

One more point for SMC's: make sure you report the correct number of responding units for each case. District Coordinators are expending a lot of effort tracking down these errors. An extra minute of your time to complete a SAR Assistance Report correctly will save several minutes of someone else's time.

Yes, SARMIS 1.2 runs on the current BTOS release, BTOS II. It has also been successfully tested under the newest release, BTOS II version 3.0.

If SARMIS isn't working as it should, consult the SARMIS 1.2 Release Notice (it originally had a light blue cover) dated October 1, 1988. If you don't have this notice, or if you have it and are still confused, contact G-NRS-1: LTJG Geddes FTS 267-1089 or LT Butler FTS 267-1579.

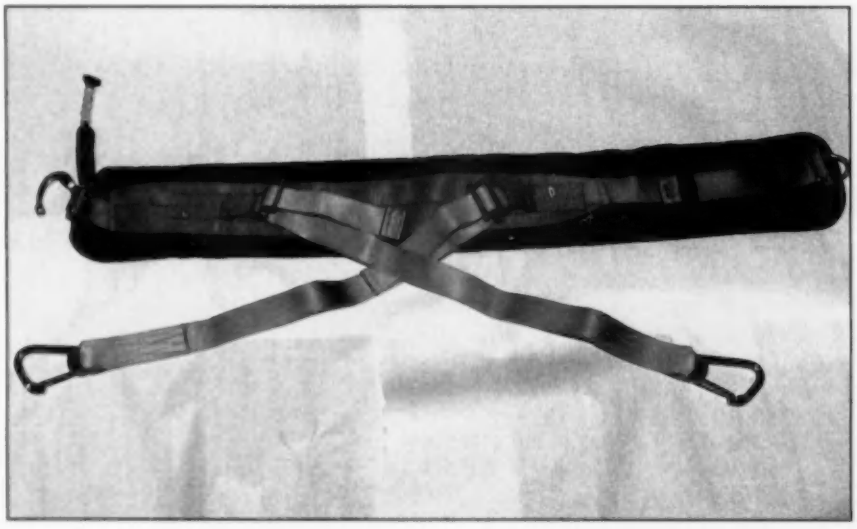
# Rescue & Survival Systems Notes

By: CWO Steve Seybold, G-NRS-2

## Modification Kits For CG-P1A Dewatering Pump

By now, all units operating CG-P1 dewatering pumps should have modified them using the kit available from its manufacturer. These kits were supplied with pumps requisitioned from Supply Center Brooklyn and several "left over" kits (10) are now available. Should you desire or need one, please call me, CWO Seybold, at FTS 267-1585 or COMM (202) 267-1585. I will send them to you at no cost (you save $58.00 plus!)...they're taking up space in my office.

## New Boat Crew Safety Belt



A new boat crew safety belt used by MLB and SRB crews during heavy weather operations has been developed and evaluated. It is now being stocked at CG Supply Center Brooklyn. Because initial stock is somewhat limited, the new belt should be procured on an attrition basis only. A maximum order limitation has been set at 5 per unit.

The old belt (NSN 4240-00-973-0157) has been made obsolete. If you use this number to order a safety belt, your requisition will be cancelled.

The new belt (NSN 4240-01-302-4452) has a wider, padded body belt to provide more protection

and comfort when worn, and a positive locking, quick-release mechanism for better security. A beaded handle provides easy recognition of the release toggle. In addition, all hardware is constructed of stainless steel, thus reducing maintenance.

When worn, the twisted V-ring should be located on the wearer's right side (figure 1). The mousing of the snap shackle is reeved down through the V-ring and locked onto its release pin. The beaded release toggle is then routed over locked snap shackle and snapped down. To release the belt, locate the beaded handle and pull it up (figure 2). Even under a load, the belt is easily released.

By standardizing the method of wearing the belt, crew members not only become familiar with its operation, but location of its release handle, when required, becomes instinctual.

*Figure 1*

*Figure 2*

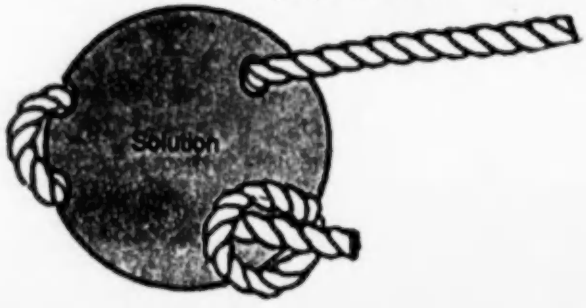
## Surface Heaving Lines

**"SAR Grams"** are issued periodically by the Navy's SAR Model Manager. They are used to disseminate information to Navy units having SAR as a mission about new equipment, noteworthy cases, etc. As I receive them, I will try to pass on information of interest which pertains to the Coast Guard.

The most recent SAR Gram contained such an item on heaving lines used aboard surface units. Use of the lead-filled monkey fists recently resulted in a serious injury and have contributed to several other injuries over the past 13 years. As a result of the Naval Safety Center's findings, the Commander, Naval Sea Systems Command, authorized the use of the "heaving ball" in lieu of the monkey fist at the end of a heaving line. The ball may be used with standard line procured through the stock system or obtained from the following sources:

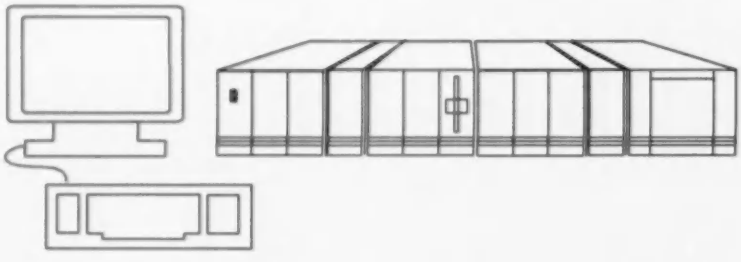
**Original Safety Line**
P. O. Box 31036
Tampa, FL 33680
(813) 237-0944

**Lifesaving Systems Corporation**
720 4th Street, S. W.
Ruskin, FL 33570-1829
(813) 645-2748



# New SAR Data Base For Districts

**By: LTJG Patrick Geddes, G-NRS-1**



By FY 91, each district and area office will have access to all the data collected by SARMIS software for their own district or area units. When somebody develops a desire to know how many lives the district saved this year, how many SAR cases a unit has run, or even how many times a district has assisted a particular fishing vessel, the district database will have the answer. This is the second step in the grand scheme of the SARMIS (Search and Rescue Management Information System) project. The first step was creating the SARMIS Data Entry System software (SARMIS/DES), which most people know simply as SARMIS. Version 1.2 of this software is operating smoothly, and the response has been almost entirely positive. Now the stage is set for the second act of the SARMIS drama.

If you've ever asked Headquarters for SAR data that you know the data entry software recorded and were told that Headquarters doesn't keep that particular piece of information, then you will appreciate one of the benefits of the SARMIS District Sub-System (SARMIS/DSS). Those particular pieces of data will soon be available at the district level, along with the rest of the data collected by SARMIS/DES. At the unit level, SAR reporting will remain unchanged, except that those archaic paper reports will no longer be submitted to the district. All units will submit floppy disks of their SAR Assistance Reports to their district or area using a special feature, already available in SARMIS/DES, called "Transfer SARMIS Data to Diskette for Mailing". *

Using floppy disks should make data handling at the districts and areas quicker and more accurate. With the DSS, the district coordinator can read the data from the file on the diskette directly into the DSS. If the data is error-free, it can be added immediately to the district database, and can be used to answer queries and generate reports. The district coordinator can use the DSS to create the file to transfer the data to the Headquarters database. In many districts, data from the field is typed by data processing personnel into a file for transmission to Headquarters. With the DSS, this step will be eliminated, along with errors introduced there.

A prototype of this system has been tested over the past year in Districts 2 and 9. Though the performance of these prototypes was less than stellar, it showed that the project could work. Using the experience gained from these systems, the DSS was re-designed and is now in place, undergoing beta testing, in District 1. Most of the bugs have been exterminated, and feedback thus far has been so positive that the new and improved system has also been installed in the Ninth District. Representatives from G-NRS-1 will be making the rounds to all the rest of the district and area offices this spring to set up this system.

* ***Please note that, right now, only districts 1, 2, and 9 have this system. Units should use the "Transfer SARMIS Data to Diskette for Mailing" function ONLY if their district is using the DSS. Any other district using floppy disks to send data should be using the function "Print Out Report/Send District Report to File" and then "Send SAR District Report to File". If the wrong function is used, the report will be useless to the district or area trying to handle it.***

# CASP Correction and Improvement Project

**By: CDR Steve R. Osmer, G-NRS-1 and CDR Jack R. Frost, XO/OCC**

The Computer Assisted Search Planning (CASP) system is a search planning tool that has been available in one form or another to Coast Guard and international search planners since 1974. Chief, Search and Rescue Division, COMDT (G-NRS), has overall responsibility for CASP. CASP itself resides on the PRIME mainframe computers at the Coast Guard Operations Computer Center (OCC), Governors Island, New York, which is responsible for ensuring the CASP system's daily operation and maintenance.

For you history buffs, in the late 1960's a direct analytic computer assisted search program was developed, Search and Rescue Planning (SARP). SARP provided a computerized method of calculating the manual search planning drift solution, as specified in the then current edition of the National Search and Rescue Manual (NSM).

CASP was originally developed by a contractor to aid the U. S. Navy in planning deep ocean searches for sunken objects. This version of CASP was designed to simulate searching for stationary targets using narrow path sensors. Its primary advantage was its ability to correctly use the results of previous searches in planning future searches. In 1970, the contractor proposed that CASP be used by the U.S. Coast Guard to assist in search planning. The principal change proposed for Coast Guard use was the addition of target drift between searches.

Between 1970 and 1974, a joint contractor-USCG effort was underway. The contractor supplied the basic CASP programs and also aided in developing the statistical data for the automatic sea current data files. The Coast Guard developed the CASP input formats and programs to read them, the computer-teletype interface, the structure of the automatic files, and the CASP subprograms that retrieve the environmental data automatically.

Early in 1974, CASP was made available for operational use. It was implemented on the Coast Guard's central computer in Washington, D.C. Access was via teletype messages directly to and from the computer. CASP was beset by many problems and full operational use by the search planners whom it was intended to serve was not realized. These users found the rigid input formats confusing and difficult to use even after specialized training. Response times were so poor that outputs were seldom received in time to be of any real value. The outputs themselves often contained obvious discrepancies causing users to disregard them in favor of manual solutions. Future changes made access easier and output more reasonable, but its use continued to be limited.

The first version of CASP used a Monte Carlo simulation vice analytic solutions. This provided for a large number (10K+) of "replications" allowing for uncertainty in the varying search planning parameters. This version of CASP ran concurrently with SARP.

In 1982 all Coast Guard response-oriented computer applications were moved from the outdated and overloaded central computer to the new Operations Computer Center (OCC) in New York. Due to the change in computers, both SARP and CASP were replaced by a new version of CASP (version 1) which no longer used a Monte-Carlo simulation but was a hybrid of the previous SARP and CASP programs. Instead of doing a full Monte-Carlo simulation, one or a few points were drifted and statistics (such as drift error) were computed to give an elliptical search area.

In 1984, the present version of CASP (version 2) replaced the hybrid version. This change reinstituted the Monte-Carlo simulation which had been abandoned two years earlier.

The manual of planning searches is, by its very nature, an extremely crude representation of reality. It contains many hidden assumptions about the second-order statistics (measure of variability or range of possible values) in order to keep the

required computations simple and easy to use. It also contains some unsubstantial rules of thumb – one of the most obvious being that drift error is always assumed to be three–tenths of the distance drifted.

CASP allows a much more complete representation of reality and has fewer hidden assumptions and rules of thumb. It uses a Monte Carlo simulation technique which accounts for both known variability and uncertainty in the input data. It can , theoretically model the complex interactions among the various components of a SAR problem including survivors, craft (survivor's and searchers), sensors, and many environmental factors. As a result it produces target location probability distributions that are not constrained to elliptical shapes but can be far more general, and more realistic. CASP retains its ability to account for the effects of previous searching and includes this information in planning for the next search – something that was not done prior to CASP. CASP also aids the search planner in determining how to best allocate his available search effort to maximize the probability of locating the target.

Over the years since CASP first became available for operational use, a number of studies have been done and reports written pointing out problems with CASP. In no case has the theory behind CASP been questioned nor has the applicability of the Monte–Carlo simulation technique had any doubts cast in its direction. All of the reported problems can be traced to implementation problems, i.e. turning the theory into practical tools for search planners to use. These implementation deficiencies fall into two broad categories – incorrect implementations of features that were modeled, and omission of features from the system.

An example of an incorrect implementation is the interface between CASP and the environmental data on file. Over the years there have been several instances discovered where CASP wasn't using the available file data correctly due to programming errors. Two now known errors of this type is CASP incorrectly reading the Fleet Numerical Oceanography Center's (FNOC) sea current data and is incorrectly adding wind vectors.

An example of an omitted feature is the simulation of a craft's movement and possible encounters with hazards (storms, etc) prior to the actual distress incident. Another is the lack of simulation of searched–for craft movement during search.

Many of these discrepancies have been known for years with little corrective action being taken. The result has been declining user confidence and waning use. CASP is a powerful tool that is used internationally, but its full potential has never been fully exploited.

In September 1989, COMDT (G–NRS) decided to convene a working group of Coast Guard "experts" to take a close look at CASP and determine what should be done to correct and improve CASP and restore user confidence. The study group with representatives from COMDT (G–NRS), the Coast Guard Operations Computer Center (OCC), the Coast Guard Research and Development Center (R&DC), the International Ice Patrol (IIP), the Coast Guard Academy's Department of Science, and both Atlantic and Pacific Area's Operations Centers met at the R&D Center in Groton, CT, 14–16 November 1989. The history of CASP was reviewed in detail. Known and suspected discrepancies in CASP were discussed. A survey of all Area and District operations centers revealed case usage of CASP had declined significantly. Several factors were recognized as contributing to this unsettling fact: lack of user understanding of and confidence in CASP; formal training in CASP no longer existed; lack of response to field requests for CASP improvement; and field perception that no one was responsible for CASP. The study group's efforts resulted in a report detailing the options available to the Coast Guard concerning computer assisted search planning and a realistic approach to attain the most viable option.

Three approaches to CASP were considered:

*(1) Abolish;*
*(2) Replace;*
*(3) Retain.*

The unanimous view of the group was the Coast Guard requires a computerized search planning system. Abolishment was rejected as an option.

The three known computerized SAR models (NSAR, CANSARP, SEABEL) are not as advanced or as capable as CASP. Replacement was rejected as an option.

The review group's final recommendation was for the Coast Guard to retain CASP, and make the necessary commitment to:

(1) do the required immediate fixes to make CASP reliable and to restore user confidence;

(2) maintain the system;

(3) modify the system to use the best data available; and

(4) improve and update the system.

A three-timed phased approach was outlined by the group:

*(1) IMMEDIATE (by end of FY90)*

(a) COMDT (G-NRS) assert CASP ownership and responsibility.

(b) G-NRS added to OCC Configuration Control Board.

(c) G-NRS establish formal federal agency liaison for environmental data.

(d) Reestablish CASP training.

(e) Institute user interface improvements.

(f) Test and review CASP functionality.

(g) Correct CASP errors found during (f).

*(2) INTERMEDIATE (by end of FY91)*

(a) Constrain data accessed by users to area of concern.

(b) Provide worldwide coverage.

(c) Accept higher resolution environmental data.

*(3) LONG TERM (by end of FY95)*

(a) Rewrite environmental data display programs.

(b) Rewrite CASP User Manual.

(c) Develop SOW for CASP rewrite.

(d) Develop permanent CASP support infrastructure.

In late January, final approval was obtained from all effected headquarter's program managers that work could commence on the CASP Correction and Improvement Project (the first two phases). A team of key individuals from the OCC, IIP, R&DC, Academy, and the National SAR School has begun work as outlined by the CASP Review Group.

# Billet Assignments In Search & Rescue Division, COMDT (G-NRS)

**By: CDR S. R. OSMER, COMDT (G-NRS-1), Chief, Program Branch**

During the 1990 assignment season there are opportunities for several dedicated and SAR-oriented officers to seek assignment at Coast Guard Headquarters in the Search and Rescue Division, COMDT (G-NRS). The billets will need to be filled are:

## G-NRS-1, Program Branch

**LCDR 21084F Policy and Budget Section Chief**

Responsible for SAR program policy and budget management. Involved in the planning, programming and budgeting processes. Trips to the Capitol for Congressional briefs. Supervise two officers and one civilian. Good SAR background with group and/or opcen experience.

[LCDR Paul Barger, FTS 267-1589]

**LT 20083D SAR Program Analyst**

Responsible for examining SAR program, with aim of optimizing. Conduct SAR simulations for field and program managers. Analyze SAR case studies. SAR and statistic or IRM or ops research background.

**LT 26083J SAR Systems Section Chief**

Responsible for IRM planning for SAR program. Provide liaison with other programs, commands and agencies on IRM matters. Oversee program IRM and ADP systems and projects (SARMIS, SARSIM, CASP, AMVER). Responsible for maintenance of the SAR data base. Supervise one officer and one civilian. IRM background.

[LT Jean Butler, FTS 267-1579]

## G-NRS-2, Facilities Branch

**LCDR 20084E Resource Manager**

Responsible for SAR program facilities in D11, D13, D14, and D17, including the National Motor Lifeboat School. Oversee MLB Replacement Project. Group operations or station background. Knowledge of small boats and shore station operations and facility management.

[LCDR Jim Hanks, FTS 267-1590]

**CWO 71081A Rescue and Survival Systems Manager**

Responsible for rescue and survival equipment systems in SAR program for surface operations. Extensive knowledge of safety and survival equipment. CWO (MAT) former ASM.

[CWO3 Stephen Seybold, FTS 267-1585]

## G-NRS-3, Coordination Branch

**LCDR 71084D SARSAT Manager**

Responsible for Coast Guard and SAR program participation in and support of SARSAT System. Extensive national and international liaison required. Ability to grasp technical concepts.

[LCDR Jon Embler, FTS 267-1580]

Interested? Contact CDR Steve Osmer at FTS 267-1581, or the incumbent listed above in [] for the particular billet.

They are all exciting career opportunities in SAR.

# Medevac Insertions and Extractions

**By: LCDR Arthur French, MD, Flight surgeon USCG TRACEN Cape May**

I am writing this to give present and future aircraft commanders an emergency medical services perspective on the indications and benefits of lowering medical personnel prior to hoisting MEDEVAC patients. In a recent aviation mishap message, which described a Class D mishap occurring during a MEDEVAC, the air station commanding officer had philosophic questions about the need to lower medical personnel to the vessel and strongly inferred that it is not appropriate to lower medical personnel if the decision to MEDEVAC the patient has already been made.

I am concerned that these comments, which will be read by almost every Coast Guard pilot, will have undue influence over aircraft commanders faced with similar decisions. We all strive to please our seniors and to make the right operational decisions. These comments, made by a well-respected Coast Guard aviator, could easily be taken as policy, especially by less experienced aircraft commanders. As a flight surgeon I am concerned with flight safety, but I am also the patient's advocate and need to provide the aircraft commander with the medical side of the risk/benefit equation which must be balanced against operational factors.

In this particular MEDEVAC there were many good reasons to lower a medical aircrewman before hoisting the patient. The patient had suffered a significant enough head injury to suffer a concussion and loss of consciousness. Closed head injuries like this can be rapidly fatal due to brain swelling. They can also be effectively treated during prehospital transportation by procedures and medications HS's are taught to use. Unfortunately it is almost impossible to assess these injuries due to the noise and vibration inside the helicopter. Also from 5% to 10% of patients with serious head injuries have cervical spine injuries which can cause permanent paralysis if not properly immobilized. It has been estimated that 3% of occurrences of delayed paralysis are due to faulty prehospital management. The catastrophic consequence of irreversible quadriplegia, as well as the huge economic costs to society to care for this lifelong disability, must be considered when deciding not to lower a medical aircrewman to properly stabilize the cervical spine prior to moving the patient. This is why the National Search and Rescue Manual states, "If the patient has serious injuries, is unconscious, or is in shock, the Stokes Litter should be used rather than the rescue basket. When possible, and medically indicated, it is preferable to lower a physician, corpsman, or EMT, to examine the patient prior to evacuation by hoisting." The days of "you call, we haul" load-and-go pre-hospital MEDEVACS are gone. Stabilization and early treatment saves lives and reduces further injury. This conclusion has been repeated in numerous studies of emergency medical services systems.

I realize the real risks involved during any hoisting evolution. Being thrown out of a warm and secure H-3 cabin, in a horse collar, into a 100 knot rotorwash over the Gulf of Alaska is not my idea of good time. A single human or mechanical glich could result in ruining the whole day. However, I also realize the very real risks that patients are exposed to through improper management, such as failure to stabilize a cervical spine fracture and causing permanent paralysis.

If I had been aboard during the MEDEVAC I also would have strongly persuaded the aircraft commander to lower someone to the boat to properly evaluate ant treat this patient. The on-scene conditions of 10 knots of wind and 1 to 2 foot seas were well within our normal operating environment, even with a DIW target. In hindsight the benefits of properly evaluating and stabilizing that patient outweigh the risks of the extra hoist and increased time over the boat.

The final decision always belongs to the aircraft commander. Flying is like emergency medicine-rapid and correct decisions must be made based on established procedures and paradigms. As a flight surgeon I don't want to do your job, but I do want to understand it. I would also expect all pilots to be familiar with Chapter 9, *Emergency Medical Services*, in the National SAR Manual. Remember that "the capability of sustaining life after rescue is as important as the searching for, and rescuing of, survivors." EMS systems and prehospital care continue to be essential and mandated component of the national SAR system.

# MLB Prototype Test Team Visits the U.K.

**By: BM1 T. C. Doucette, MLB Test Team, (206) 642 8847 FTS 396 9393**

*Hamish McDonald at the helm of a 30' ORB*

The MLB prototype Test Team based at Ilwaco, Washington recently visited Stonehaven, Scotland on a two week training mission designed to help them prepare for the initial testing of the new MLB scheduled for delivery to the Coast Guard in late June of 1990.

The visit gave us a unique opportunity to operate several different heavy weather, high speed boat designs not available here in the states. A large portion of our time was spent at Maritime Rescue International (MRI), a private school that teaches boat operation to the European lifeboat crews and the multi-national crews who work on the North Sea oil rigs.

This school, formerly associated with the Robert Gordon Institute of Technology (RGIT) Marine Safety School, is world renowned for the excellence of training provided to rescue crews, and currently has many research and development projects underway in several areas of interest.

While at MRI we spent over 60 hours underway on a wide variety of boats, including a self righting, 32 foot narrow tunnel catamaran capable of speeds in excess of 50 knots, and 36 foot Osborne RHI (the prototype for the successful Osborne 38 now in production). We crew also operated a prototype 30' Offshore Rescue Boat (ORB), a self righting, rounded V bottom hull powered by two specially modified, counter rotating 200 HP outboards with performance that is best described as exhilarating.

We spent one day discussing boat design with Mr. Reginald Chatfield, a brilliant marine architect who has just retired from Osborne Rescue Boats Ltd. To

*47 crew conducting Helo Ops with RAF helicopter and self righting narrow tunnel catamaran.*

some of us, this opportunity alone made the entire trip worthwhile. Mr. Chatfield's many designs include the 30' ORB, and the 36' and 38' Osborne enclosed cabin RHI's.

Several side trips allowed us to operate with the Royal National Lifeboat Institute (RNLI) and included a chance for all the team members to run an ARUN (54') homeported at Aberdeen, Scotland and TYNE class (47') self righting lifeboat located at Montrose, Scotland as well as swap sea stories with their Coxswains and crews.

Our team's senior Test Coxswain, BMCM Roger W Russell also made a last minute trip to Bodo, Norway to visit a Norwegian 48 foot Rescue boat that has many similarities to our new design.

Although everyone is certainly happy to be back in the States, we'll not soon forget the lessons we learned or the wonderful people we met "across the big pond".

# National SAR School Training In Hong Kong

**By: CDR H. E. Blaney, Jr., National SAR School Chief**

*Graduating Class and SAR School Instructors*

While most of you were consuming your Thanksgiving turkeys and shopping for Christmas, a five man training team from the National SAR School visited the "Fragrant Harbour" to present a two week SAR course for the government of Hong Kong. This session represented the third time a Coast Guard team has trained in Hong Kong.

This arrangement began after Hong Kong SAR forces suffered a setback in a major case, and the need for comprehensive SAR training became evident. A top Civil Aviation Department official attended the National SAR School in 1984 and felt that the SAR School course would meet Hong Kong's needs. A request was made through the State Department and a team comprised of SAR School, PACAREA, CCGD12 and CCGD14 instructors presented the first biennial session in late 1985.

An overview of the Hong Kong SAR system is in order to appreciate the challenges which faced the training team. SAR responsibility in Hong Kong rests with the Security Branch, which handles defense, law enforcement, and public safety matters. Several departments within Security Branch share the load. The Civil Aviation Department (CAD) is responsible for aircraft SAR and EPIRB/ELT incidents, and the Marine Department (MARDEP) prosecutes all SAR relating to vessels. Both agencies retain these responsibilities regardless of the location of an incident, and both operate

individual RCC's on a part-time basis, whenever cases arise. Neither have any SAR facilities to speak of, so both must rely on the use of vessels and aircraft belonging to other agencies.

The primary providers of SAR facilities are the Royal Hong Kong Marine Police (MARPOL), and the Royal Hong Kong Auxiliary Air Force (RHKAAF). MARPOL maintains a large fleet of vessels ranging in size from utility boats to 150 foot command launches. The RHKAAF is a small but highly professional organization of both volunteer and full-time pilots and support crew who operate a small squadron of fixed wing aircraft and helicopters available for SAR. The British Royal Navy and Royal Air Force are also available for SAR assistance, but play a very limited role.

Our class consisted of students from CAD, MARDEP, MARPOL, and RHKAAF, as well as two students from Malaysia, two from Brunei, and one from Singapore. Students, and the various agencies involved, took the course very seriously and were quite competitive. One student took two weeks leave from his regular job so he could attend for the Auxiliary Air Force, and CAD presented a two week pre-SAR training session so their students would be prepared for our arrival. Our curriculum was patterned primarily after our Group Search Planner course, but a session comparing the coastal and oceanic models was added. All case studies and exercises were rewritten to localize the cases for the Hong Kong area, using Hong Kong SAR assets rather than US units.

A three day SAREX run by CAD followed the SAR course. All Hong Kong SAR agencies participated, as well as ships and aircraft from the Royal Australian Navy, the Japanese Maritime Safety Agency, US Air Force, and US Navy. The exercise consisted of an aircraft static display; a short range exercise, which included an Air Force PJ jump; and a long range exercise, held in the South China Sea, where surface ships and aircraft searched for wreckage which had been released a day earlier. With but minor hitches, the exercise was most successful.

The present political situation in Hong Kong presents a unique opportunity for the Coast Guard, as well as the U.S. Government. In 1997, the British government will cede control of Hong Kong back to the People's Republic of China. As this time approaches, British influence over Hong Kong must decline. The Coast Guard has established credibility with the PRC through these SAR courses; although no PRC students participated this year, they were involved in the earlier sessions. As a result, we may be asked to continue or even increase this assistance. The pursuit of saving of lives at sea may very well prove to be common ground where the U.S. and Asia can meet and strengthen their relationship.

# Send Three And Four Pence, We Are Going To A Dance

**By: CDR H.E. Blaney, Jr. National SAR School Chief**

The setting was Hong Kong, towards the end of our SAR course being held for the government of Hong Kong. During the Case Study Analysis session students are asked to present case studies of SAR cases gone bad, and analyze just what went wrong and what lessons we can learn from the mistakes.

Too often these sessions are rather dry as the students simply paraphrase and read the case studies. Not Trevor Berry! Trevor, the individual who was later presented the Harold Nowicki Sharpshooter Award for being the class know-it-all, was tasked with analyzing a case where poor communications coupled with poor judgement resulted in catastrophes. What follows is, to the best of my recollection, Trevor's lesson on communications based on a legend from British military history.

***Good communications are essential to successful operations. What I'm about to offer you now, with the help of some of your classmates, is an example of communications and message analysis. First I will pass my message verbally, since time is of the essence, and I will later follow up with hard copy.*** [How often have you heard that one?]

Mr. Berry whispers into the ear of a student and returns to the front of the classroom.

***Now then, LT English, what was the message?***

Replies Mr. English, "Send three and four pence, we are going to a dance, sir"

***Very well, but for the benefit of our Yank instructors, what is three and fourpence?***

"Sir," replied another student, "before the advent of decimalization, British currency was reckoned on the pound/pence system. Three and four pence is three shillings and four pence. The equivalent in our present currency is .17 pound. Since the rate of exchange is .08 pounds to the H.K. dollar, this amount equals $2.10 Hong Kong."

***Very well, but can we fund this venture, and under what spending category does it fall?***

"We have the funds, sir, and I believe it is chargeable under code HD 436, Serial Number 177B, entertainment."

***Fine, but what exactly is a dance? [Ed note: pronounced 'dahnce']***

"Sir, Webster defines dance as 'the moving of one's feet or body, or both, rhythmically to the accompaniment of music'."

***I see. And what do we wear to the dance?***

***When is the dance?***

***Where is the dance?***

***How do we get to the dance?*** [The questions & answers get rather monotonous at this point, but I think you get the picture.]

***Very well, we shall attend the dance. Before we go, let's see if our written confirmation has arrived yet. Mr. Communications Officer, have you received a message for us?***

"Negative, sir. Perhaps operations has it."

***Operations, do you have a message for us?***

"Negative, sir. Try admin."

[Several more inquiries result in the same negative responses.]

***Well, who does have the bloody message?***

"Sir, I have something for you," replies someone who has no business whatsoever with the message we are expecting.

***Ah yes, that is it. What does it say?***

"Sir the message reads, 'SEND REINFORCEMENTS. WE ARE GOING TO ADVANCE.'"

Well, what does all of this have to do with SAR, or anything for that matter? Take a look at what happened. Our "OPCEN" generated much activity, all for nothing. Our reinforcements were never sent

because we were readying ourselves for a dance. Even if the first message had been correct, we were never invited to this dance, we were just asked to send money. If we had sent the money right away, we would have discovered our mistake much earlier. Going through the bureaucratic machinations only complicated our misunderstood communications. People have died due to this type of well-meaning but wasted effort.

The moral to this story?

1. Not all action is good. Know what you're doing before you start doing it.

2. Confirm all communications, especially verbal messages. You can't always afford to wait for the hard copy.

3. Use common sense. Referring back to our example, what does a dance have to do with the problem at hand?

4. Don't get bogged down. We've got lives to save!

# Six Men Saved In Hawaiian Waters

**By: PA3 David M. Santos, 14th Coast Guard District (dpa)**

Six men from a sunken 60-foot fishing boat, the SIN HUNG, were rescued Oct. 13 by the Coast Guard Cutter WASHINGTON. After a two-day search by Coast Guard units in the 14th District the survivors from the Oahu-based vessel were rescued off Maui after their boat began taking on water and quickly sank.

The WASHINGTON, CAPE CORWIN, two helicopters and two C-130's from Air Station Barbers Point were involved in the search which began shortly after the Coast Guard received a distress call Oct. 11. The crew of the SIN HUNG relayed the call through another fishing vessel about a hundred miles away saying that the boat was taking on water in its engine room. They also said they had no liferaft and might have to abandon ship when suddenly their signal broke off.

On Thursday afternoon a C-130 spotted an oil slick and some debris about 30 miles north of Maui. The scattered debris, nothing more than pieces of wood and styrofoam, could not positively be identified as being from the SIN HUNG. As the search continued Friday, October 13., deck planking and several propane tanks with "SIN HUNG" stencilled on them were spotted by helicopters and recovered by the WASHINGTON.

Then it happened. "The WASHINGTON was working its way up the debris as the helicopters followed overhead until they came upon the survivors," said Lt. David Flesher, Joint Rescue Coordination Center Honolulu.

Lt. Michael Andres, pilot of the helicopter that spotted the men said, "They were all in the water clinging to a makeshift raft. They were waving and giving us the thumbs up sign and we motioned back to tell them that the cutter was on the way." The survivors tied fishing buoys together to remain afloat. Although they were in the water for roughly 40 hours all were in good condition upon arriving in Honolulu on that Friday the 13th, their lucky day.

# SAR Bits

## Head / Spinal Column Injury Conference

By: PA3 B. E. Billow, Ninth CG District, Public Affairs

The Head / Spinal Column Injury Conference sponsored by PREVENT Cleveland was held recently at Air Station Traverse City. . PREVENT is a local organization consisting of EMT's, surgeons, educators and parents mothers of children who have suffered from head and spinal injuries.

EMT's from each of the Ninth District's Small Boat Stations, Air Stations and Groups attended along with PREVENT's staff and CDR William W. Pickrum, Chief of Search and Rescue, Ninth Coast Guard District.

The curriculum for the conference consisted of a video tape titled "Harms Way" as well as a slide presentation. The program consisted primarily of ways to prevent head and spinal injuries, but also contained some material on how to treat patients suffering from these and other injuries as well. Learning how to use the backboard correctly and questions dealing with the use of heated oxygen were just a few of the areas touched on by the EMT's.

"I consider the conference an unqualified success and fully support expanding the program to train as many of our people as possible," said CDR Pickrum.

Copies of the video tape as well as slides with a sript will be made available for distribution to D9 operational units.

The conference was headed by Dr. David E. Lehtinen, Chief of Neurosurgery at Lakewood Hospital, Clarence Moore, Chief of Cleveland EMS and Mrs. Marcy Tank, from PREVENT's Board of Directors.

## EMT Recertification

By: CWO4 H. D. Jones (G-OAV-3)

The EMT Recertification course is a class "C" course. The class convening dates are included in COMDTINST 1540.6 (CG Formal Training Schedule). The Coast Guard course is currently 5 days and held at EMT school, CG TRACEN Petaluma.

EMT's and their units should plan ahead and submit Short-Term Training Request CG-5223, (Rev 6-84) for each member who requires recertification during an upcoming fiscal year in which the member's qualifications expire. List the date and place of last certification in item 22. The member must have a valid state or national registry certification in order to attend a recertification course in any state and at the Emergency Medical Technican school, TRACEN Petaluma. EMT recertification quotas are issued by the fiscal year, not the calendar year.

All EMT's must take a recertification course before their qualifications expire. Once qualifications expire, members are required to repeat a basic course to regain certification.

If you do not receive a training schedule prior to beginning of an upcoming fiscal year, you may submit the Short-Term Training Request leaving item 17 blank or request a specific quarter. Point of contact is COMDT (G-OAV-3) FTS 267-0952, or (202)267-0952.

## Articles Wanted

ON SCENE is a quarterly magazine published by the Search and Rescue Division (G-NRS). It serves as a forum for sharing information on all aspects of search and rescue. Recent issues have included articles dealing with equipment, procedures, SAR case reviews, vessel and boat mishaps and innovative uses of new technology.

ON SCENE is dedicated to presenting ideas that will improve effectiveness in the SAR mission. We strongly encourage participation by our readers, especially those involved with SAR on a daily basis. ON SCENE is equally enthusiastic to have articles submitted by any of our world wide readers. Submitting your thoughts and experiences could make the difference between a successful and an unsuccessful mission for someone else in the future.

Articles may be submitted in any format. If you use the standard terminal to prepare your article, it would be very helpful to include a copy on a 5 1/4" or 8" floppy disk. Pictures are most welcome. Facilities are also available to receive articles by modem or FAX.

Although we can not promise you a check for $10,000 if your article is published, we can promise you a byline and your own copy of ON SCENE. More importantly you will get the satisfaction of knowing that someone is benefiting from your experiences.

*Commandant (G-NRS-2)*
*Editor, ON SCENE*
*U.S. Coast Guard Headquarters*
*Washington, D.C. 20593*
*FAX: 267-1057*

## Guam Search and Rescue Association

By: LTJG Laurie J. Mosier, Operations Officer, USCG Section Marianas

The Joint Rescue Sub-Center at Coast Guard Section Marianas on Guam recently organized an island-wide SAR Association known as GSARA (Guam Search and Rescue Association). After only 2 meetings the group already has membership of 39 individuals representing 21 island-based agencies, including military, civilian and government organizations.

With a goal of unifying and enhancing searches in and around Guam, the group has already identified several areas that need attention. These areas include communications, inland SAR responsibility and the need for an annual island-wide SAR exercise. Mr. Robert Morris, an active Coast Guard Auxiliarist and pilot for Continental Airlines, is leading the communications subcommittee while Asst. Chief John M. Reyes, Guam Fire Department, chairs the island SAR subcommittee.

The association is putting together a SAR Resources Handbook that will list all available SAR assets (from HAM operators to Navy aircraft) located on Guam. It is hoped that this handbook, along with the visibility received through the group will increase general SAR awareness among the people of Guam.

The majority of SAR cases handled by the JRSC include medevacs from outer islands, diving accidents and disabled vessels. Because the Coast Guard has only limited surface assets and no air assets on Guam, the majority of SAR cases prosecuted by the JRSC involve either U.S. Navy or Government of Guam resources.

# Preparing for Cellular Phone SAR Cases

**By: BM1 Michael Hanak, CG Group Milwaukee**

*Editors note: The following article is true, the names have been changed to...well, you all know how it goes. This article is a good example of why we must keep abreast with current fads and the ever changing world of technology.*

The idea of crossing Lake Michigan by following the setting sun sounded pretty good. To Bill, owner and operator of the 24 foot pleasure craft MOLLY, it certainly seemed like the nautical thing to do. Unfortunately, Bill hadn't counted on the sun disappearing below the horizon.

On an evening in September, Bill and two guests departed Sawyer, MI and set out across Lake Michigan en route Chicago, IL, a distance of approximately 50 miles. The MOLLY was equipped with a cellular phone, a compass (which Bill said he didn't trust), a handful of flares and a 10 ft raft. There were no charts, radios or navigation equipment.

Assuming that the sun set over Chicago, the vessel was piloted by the intrepid boaters in a westerly direction at approximately 20 knots. Four hours later however, the sun had set and the MOLLY had not reached its destination. With no sun to follow, Bill and company decided to sit the night out and proceed in the morning. At first light, they headed opposite the rising sun for about 2 hours, until the gas ran out. Still no land was in sight!

Using his cellular telephone, Bill called for help to the "Chicago Coast Guard". Station Calumet Harbor received the call and attempted to determine where the boat might be. But the best Bill could do was to tell the station where and when he had departed, the general direction he had headed and how fast. Shortly, Group Milwaukee joined this unique case as SMC and the Group Duty Officer (GDO) contacted the MOLLY in an attempt to gain more information. It soon became apparent that Bill and his guests were extremely inexperienced sailors. Finding them would be no easy task! Upon further questioning, Bill indicated that he may have actually traveled in a somewhat "northerly" direction keeping the receding shoreline "behind him", (well, sorta). As for his speed, Bill was "fairly certain" that's how fast he was going. Without any better information, the GDO was now faced with a search which encompassed the lower third of Lake Michigan.

More information was needed. PRECOMS / EXCOMS determined that Bill and his vessel were for real, but not much more. Another call to Bill indicated they had an FM radio, but they could only pick up one commercial radio station. Using the call signs provided by Bill, the FCC was called in an attempt to determine the station's location and signal strength. This lead turned out bad since the only station with those call letters was located in Rhode Island. Attention was then turned to the phone Bill was using with the idea of obtaining the transmitting frequency. Using DF equipment, the MOLLY could then be found in short order. Unfortunately, Bill's inexperience extended to all things mechanical or electrical. He had no idea what the phone's frequency was.

Now what? During the numerous attempts to call Bill, the GDO recalled that on one unsuccessful try, the recorded message indicated that the number called was either not in service or was out of the "Cellular One" system coverage area. After a series of calls to various representatives of the Chicago based company, the GDO finally made contact with a systems engineer who was willing to help. The first step was to call Bill and keep him on the line (not an easy task). Once this was accomplished, the GDO notified the engineer who, using Bill's number, was able to determine which "cell" in the system was being used to complete the call. Basically, cellular phone systems are controlled by computers that follow individual transmitters (phones) from one receiving site to the next (cells) by signal strength. Unfortunately, cellular phones operate within a wide frequency band. For any given call, the phone could be operating on one of many frequencies above 800 Mhz. Once the cell was isolated, the engineer was

then able to determine the general direction of the transmitting station. Under normal conditions, cellular phones generally have a range of 15 to 30 miles over water. As far as the engineer could determine, the MOLLY was indeed somewhere out on Lake Michigan in the vicinity of Waukegan, IL. With Coast Guard boat crews in the area reporting 4 miles of visibility and with Bill reporting that he couldn't see land, the GDO finally had a search area. A short time later, the MOLLY was found. Bill and company were safe and sound and after a "talk" with the coxswain from Station Kenosha's 41' UTB, Bill was better informed about the dangers of boating on the Great lakes.

Lessons learned: As cellular phones become more and more popular, the incidence of boaters using the phones as their primary means of communication will increase. When the ill-prepared, cellular phone equipped boater gets in trouble, the problem of finding them can be extremely difficult. Avoiding this difficulty takes some preparation. The following is a list of suggested procedures that can be used to prepare for cellular phone SAR cases:

1. Establish a point-of-contact with the engineering representative of local cellular phone companies. If possible, obtain a listing (sometimes called a "roaming directory") of the company's access numbers to their transceiver sites. In those cases where the potential search area is very large, having these numbers speeds the process of narrowing down the location of the boater.

2. Obtain a listing of local rescue agencies with cellular phone equipment. Establishing communications with a cellular phone via another cellular phone enables the systems engineer to more closely define the caller's location. However, it is important to understand that sometimes equipment from different companies cannot be used due to incompatibility.

3. Establish a SAR checkoff for prosecuting cellular phone cases. As a minimum, this checkoff should include:

** Number of distressed caller's cellular phone,*

** Cellular phone company names,*

** Is cellular phone "roam light" on? If so, this indicates the caller is out of the normal operating area of their "home cell".*

** Have caller dial the information number for their cellular company (if they know it or if it can be obtained from the Roaming Directory): this will tell them what city system they are operating in. Again, this is another method of better defining the vessel's location.*

** Wattage (usually 0.5, 1.5, or 3.0) and power source of the caller's phone (allows system engineer to determine the signal strength of the caller and whether or not the signal will diminish with time). Note: battery only phones have a total calling time of approximately 30 minutes of constant use.*

Once a liaison is established with the cellular company in your AOR, running a cellular SAR exercise should be fairly easy. Simply send a small boat (an Auxiliary vessel works great) out onto the water with a cellular phone company engineers. By making use of the expertise that your local cellular carrier can provide, you can work together to narrow a huge search area into a manageable one.

"Hello Coast Guard? Says here that I should be at the rest area off Interstate 94"

# Overview of the Motor Lifeboat Replacement Project

**By: BM1 T. C. Doucette, MLB Replacement Project**

## Background

The concept of a high speed heavy weather rescue craft is not new to the United States Coast Guard, nor to the rest of the world. As far back as 1959, when we were in the design phase for our present 44' MLB, a 25 knot design speed was specified. The 44 MLB, although an adequate rescue craft, did not meet this requirement, and was not modifiable to attain it. A top speed of 12 knots (less than half it's design speed) was all the operational boats were capable of. At that time, the technology was just not available to produce a high speed boat capable of taking the punishment of heavy weather, year in and year out.

The 44' MLB has served us well, however as the first boats in the class approach their thirtieth birthday, they are becoming more expensive and difficult to maintain. Spare parts are hard to get, and many outfit items are no longer produced. A recent survey of three randomly selected 44's found that all had major problems indicative of a boat nearing the end of it's service life, i.e; frames wasted away, superstructures rippled and corroded, and major electrical problems. Cost estimates ranged up to about one million dollars per boat to restore them to like new condition. After an expensive restoration project, however, we would still have a thirty year old design, with it's inherent problems.

Armed with this information, Naval Engineers at Coast Guard Headquarters in Washington DC began design work on a new class of Motor Lifeboat. Their goal was to design a boat that retained the durability and survivability of the 44 MLB combined with 30 years of technological advances.

In 1984, a preliminary design outline was sent out to Coast Guard units for comment. These

comments were incorporated and the concept design was again sent to the field. This process was repeated several times, and allowed extensive review of the project by "the operators".

In 1987, the project was presented for commercial bid. The contractor was tasked with finalizing the design and constructing one prototype for evaluation by the Coast Guard. The contract contains a provision for five more boats, should the prototype prove successful.

The contract was awarded to TEXTRON Marine Systems in New Orleans Louisiana, a company with extensive background in high tech aluminum craft, including surface effect landing craft and the US Coast Guard Suface Effect Ships. Their production facility is state of the art, and uses the latest in Computer Numerically Controlled (CNC) plasma arc cutters, allowing precise, repeatable cuts, and creating exact fits of individual components for the greatest strength to weight ratio possible.

These boats will be stationed at strategic locations throughout the United States to allow the design to operate in different environmental conditions throughout the country. After the boats have proven themselves, a competitive bid will be opened for construction of about 100 boats over a five year period. By 1997, the last of the 44 footers should be phased out of service.

## Design Specifications

Because of the requirement to be fully compatible with existing facilities, some limiting factors were incorporated into the contract. These include a beam of 14 feet, overall length of 47 feet, and a maximum hoisting weight of 40,000 pounds.

A calm water top speed of 25 knots and an idle speed of 3 knots gives the boat a very wide speed envelope useful for rescue and law enforcement work. Powered by two 6V-92 TA Detroit Diesels rated at 425 SHP each, the boat will easily tow boats up to 150 tons.

The design possesses significantly more stability than it's predecessor, which substantially reduces rolling and pitching in a seaway. When coupled with increased speed and the enclosed cabin, crew fatigue becomes less of a concern, and mission effectiveness is increased.

The hull and superstructure are constructed of high strength aluminum alloy, pound for pound 30% stronger than steel, and its resistance to corrosion may allow us to leave the hull unpainted above the waterline except for distinctive Coast Guard markings, resulting in greatly reduced maintenance in terms of man hours and costs.

State of the art electronics, coupled with an ergonomic layout will further improve the search and surveillance capabilities of the craft. An integrated LORAN/RADAR/MERCATOR CHART overlay on a video plotter will provide the coxswain with updated navigation info and real time fix capabilities. Secure voice VHF radios, and conventional HF transceivers allow the crew a wide variety of communications options.

## Time line

Construction of the prototype began on August 10, 1989. Projected delivery of the prototype is scheduled for no later than July of 1990. A selected crew at the National Motor Lifeboat School in Ilwaco, Washington will conduct six months of intensive testing aimed at assuring the design meets all the requirements of the Coast Guard. Any necessary modifications to the design will be accomplished during this test period. At the end of this six month evaluation, the decision will be made on building the five additional boats, incorporating any changes made to the prototype.

These five boats will be operated throughout the Coast Guard, so that before the final contract for additional boats is awarded, the design will have accumulated seven boat-years of operation.

The MLB test team is now in place at the NMLBS in Ilwaco, our phone number is FTS 396 9393, or (206) 642 8847. BMCM Roger Russell is the test coxswain.

# Off-Shore Sea Surface Temperatures Available For Rescue Swimmers/Pararescue Deployments

**By**

**Mr. Neal Thayer**

**(G-NIO)**

Knowledge of sea surface temperatures is crucial safety information when Coast Guard rescue swimmers or Air Force PJ's enter the water at a rescue scene. Accurate offshore sea-surface temperatures from satellite-borne infrared sensors are available from the National Oceanic and Atmospheric Administration. To obtain the information 24 hours a day, call the following locations and request the sea surface temperature at the desired latitude and longitude. If you have any special questions, contact the individuals shown during regular working hours:

| REGION | TELEPHONE | POINT OF CONTACT |
|---|---|---|
| Atlantic | FTS 763-8294/5 | Jenifer Clark |
| | (301) 763-8294/5 | |
| Eastern Pacific | FTS 470-9122 | Ernie Daghir |
| (20S-50N, west to 180W) | 291-7767 | |
| Ask for "Lead Forecaster" | (415) 876-9122 | |

If you have any problems or questions, call me at FTS 267-1457.

# Auxiliarist Receives Award of Operational Merit

On September 4, 1989, Mr. Alan Harenberg and Gloria Harenberg, owner/operator of the operational facility "TINKERTOY", were making a scheduled Safety Patrol of the uplake area from Bullfrog, Lake Powell, Utah. A call came across the radio asking the Harenbergs to respond to a medical emergency at Hansen Creek by Newell Hoskins on Auxiliary vessel AA'OLI.

Hansen Creek is approximately 10 miles north of Bullfrog. The description of the accident was given as "a person in the water, run over by a boat, with severe lacerations to both legs". Meanwhile the Utah State Parks Patrol with two EMT's on board were notified and rushed to the scene of the accident. At the same time the National Park Service was notified and they called for Air Evac helicopter from Grand Junction, Colorado.

Mr. Harenberg was first on scene and found the following: Boat A was pulling a skier (the Victim), boat B was following boat A at an unsafe distance also pulling a skier. The skier from boat A got tired and dropped off, boat B passed over him severing one leg just below the knee and breaking and cutting the other leg. The operator of boat A jumped in the water and lifted the injured skier on board, tore up a life jacket and used the cloth to place a tourniquet on both legs of the injured boy.

Fortunately Mr. Harenberg had extensive training and past experience of First Aid was able to partially stabilize the boy. The Utah State Parks Patrol arrived with EMT's and completed the stabilization. The medevac Helicopter arrived and evacuated the victim to a hospital in Salt Lake City. The boy was given a blood transfusion en route. On arrival he was taken to the emergency room and operated on immediately. The surgeons amputated the severed leg above the knee, and set the breaks in the other leg. His condition was listed as critical at noon the next day.

Several factors were listed by the National Park Service as being critical in saving the boys life:

1. The quick action of the boat operator in getting the victim out of the water and applying a tourniquet to the his leg.

2. The quick response of the assisting boats in contacting the USCG AUX and the fast response time in getting medical help to the boy.

3. The quick stabilization of the victim by Herenburg.

4. The fact that the State Park Patrol was close enough to get to the scene so quickly with EMTs. Also the placement of a balloon splints on the legs helped stabilize the patient's blood pressure.

5. The speed with which the Air Evac took place (the foresight of National Park Service Ranger Ross Rice in ordering it from Grand Junction before need was completely established).

6. The administration of the whole-blood I.V. en route to the hospital.

According to the hospital staff, (quoted by the NPS district Ranger the next day), if any one of the preceding factors had been delayed or omitted, the result would almost surely have been a fatality.

For his quick response to the scene and efforts that successfully stabilized the victim, Auxiliarist Harenberg was presented with the Auxiliary Award of Operational Merit.

# Coast Guard Auxiliary Search and Rescue Detachments

**By: Helen McCabe, District Public Affairs Officer 5 (NR)**
**CWO Arlen Hoover, MSO/Group Philadelphia**

In the Fifth Coast Guard District Northern Region (the state of Delaware and approximately half of the states of PA and NJ), Auxiliarists are responding to the needs of the recreational boating public in a number of different ways. They man Coast Guard Search & Rescue Detachments (SARDET's) at Fortescue, NJ, Townsend's Inlet, NJ and Roosevelt Inlet, DE before the SARDET's are activated by Coast Guard personnel in the Spring and after their official closing in the Fall. The latest effort is the establishment of Auxiliary Search & Rescue Detachments (AUXSARDET) at the extreme limits of a Coast Guard Station's area of responsibility.

The advantage to the Coast Guard is that an AUXSARDET allows the Coast Guard to focus the Auxiliary effort at a single location and draw support from throughout the region in order to provide a reliable, cost-effective and self-contained search and rescue presence in a remote area. This can shorten the response time for emergency cases, and potentially alleviates the need for the Coast Guard to undertake a long-duration type SAR case in far away places. The advantages to the Auxiliary are training, fellowship and the gratification of filling real operational commitments.

The two AUXSARDETs in operation are in Bordertown NJ, and Delaware City, DE. AUXSARDET Northern Bordentown is based inside a shipping container and AUXSARDET Delaware City is based in a World War II bunker. Both AUXSARDETs have crew comforts available including air-conditioners, and refrigerators, but Delaware City also has a stove, microwave, washer and dryer. These AUXSARDETs are operated on weekends and holidays during the peak boating season and consist of an Auxiliary vessel and crew, and communications watchstanders at a building equipped with a radio and telephone. Case prosecution guidance is transmitted by telephone from the OOD at MSO/Group Philadelphia. The AUXSARDET then dispatches the vessel and crew. "It took a healthy-helping of ingenuity to start these two AUXSARDETs," said C.G. Auxiliary Fifth Northern Region Commodore William Pierce.

Both AUXSARDETs have met their operational commitments every weekend and holiday from 1000 to 2200 since coming on line on July 1, 1989. They responded to 39 SAR cases in FY89.

# Better Idea For PML's

**By: CWO Steve Seybold, G-NRS-2**

Recently, a beneficial suggestion was submitted through the Idea Express program by SN John McDaniel of CGC CITRUS. His idea to help preserve the date of manufacture/expiration on the personal marker light (PML) used on personal flotation devices was reviewed and approved.

While inspecting PFDs aboard the CITRUS, SN McDaniel noticed the dates were inadvertently removed due to moisture or abrasion of the PML caused while they are stowed. Since the PML has a limited shelf life (3 years from date of manufacture) it is imperative these dates are legible. Replacement of these distress signal lights is necessary if the date of manufacture cannot be determined.

To remedy the problem, SN McDaniel suggested using a clear tape to protect the dates. When his idea was reviewed by PACAREA TRATEAM 1, it was improved upon. Their recommendation to dip the sealed end of the PML in paraffin wax was approved and will be included in a change to COMDTINST M10470.10 (series). Upon their recommendation, credit for the idea to protect the PML will be given to SN McDaniel since his idea "got the ball rolling".

During the Headquarters review of this idea, the PML's manufacturer, American Cyanamid, was contacted and agreed there was indeed a problem with this. They have already taken measures to prevent the problem in the future by using an embossed vinyl seal vice the paper ones used in the past. As of February, 1990, all PMLs will have the new seal. Thus, the need to preserve PMLs manufactured after this date will no longer exist.

KUDOS to you SN McDaniel...keep up the good work!!!

# 102 YEARS AGO

## US. LIFESAVING SERVICE ANNUAL REPORT 1887

The saddest disaster of the year is, without doubt, that of the German ship ELISABETH. This wreck occurred on the 8th day of January, 1887, at a point on the coast of Virginia about twelve miles below Cape Henry, and involved the loss of twenty-seven lives, including the entire personnel of the ship and five men of the Life-Saving Service. The ELISABETH was a fine craft of twelve hundred and thirty-nine tons register, built in Boston in 1855, as the EMPRESS, and subsequently sold to parties in Bremen who put her under the German Flag. She had sailed from Hamburg the latter part of the preceding November with a cargo of several hundred tons of kainit, or manure salt, and five thousand empty petroleum barrels consigned to parties in Baltimore; her commander being Fredrick G. Halberstadt, an experienced and able shipmaster, who had celebrated his fiftieth round voyage across the Atlantic the previous summer, in Baltimore.

The ship arrived on the coast in the vicinity of Cape Henery just as a building snowstorm set in at about dusk in the evening of Friday, January 7. The wind had freshened to a twenty-eight mile gale from the northeast and this raised a turbulent and dangerous sea. The time at which she struck can only be conjectured; but from the fact that she sunk on the outer edge of the bar fully three hundred and forty yards out from the high-water mark and that her starboard anchor was down, it is thought that she grounded at low-water just before or about midnight and that the anchor was dropped to prevent her from driving nearer to the shore, with the hope that she would float when the tide rose. It is possible that finding herself in shoal water she had cast anchor, and then owing to the violence of the gale and the sea had dragged into the breakers. Whichever of these theories is correct, one thing is certain, the ship soon bilged and then settled rapidly in the sand; for at daylight on the morning of the 8th, she was decks to, and the sea was breaking over almost her entire length. She lay parallel to the beach with her head to the north, the anchor which was down trending to the northeast, or off shore, on the starboard bow.

Discovery of her was made at about 1 o'clock in the morning by the mid-watch patrols of the Dam Neck Mills and Little Island Stations, (Sixth District,) Surfman George W. Stone, of Little Island, reaching his station two and a half miles to the southward at 2 o'clock, while Surfman James E. Belanga arrived and gave the alarm at the Dam Neck Mills Station, four miles to the northward of the vessel at about twenty minutes to 3. The ship was about half a mile south of the place where the patrols of the two stations usually meet, and therefore, within the Little Island patrol limits. The respective crews sprang from their beds as soon as they heard the alarm, and set out upon the mission from which some of them were destined never to return alive.

The ship being within Keeper Abel Belanga's precinct, he proceeded to the scene with his beach apparatus while Keeper Barco, of Dam Neck Mills took simply a spare shot-line. The latter and his men thus comparatively free-footed, and having the wind at their backs, reached the neighborhood of the wreck shortly after 4 o'clock, finding that Belanga's men had not yet come up pushed on south to meet them and give them a helping hand. This aided the latter materially, as they were nearly exhausted from drawing the heavily laden cart against the wind, and though the snow drifts, in some places almost waist deep. The ship meanwhile had been making signals

by torch or Coston lights every ten or fifteen minutes from the time of her discovery by the patrol. It lacked but twenty minutes of 5 o'clock, when the party arrived and commenced operations for an attempt to establish communication by means of the wreck-gun. Although the moon was nearly at its full, it was deeply hidden by the snow clouds and the morning was dark; so dark that only a dim outline of the vessel could be seen, not plainly enough, in fact, to distinguish the rig.

The gun being placed in what was judged to be the most advantageous position, abreast of the vessel's bow, and just clear of the wash of the surf, four attempts were made while it was yet dark to throw a line on board. These were all unsuccessful. The first shot was with a No. 9 Line, the largest used by the Service, the elevation being twenty-five degrees. The line dropped into the water short of the object, and quickly drifted off to the southward with the strong current setting in that direction. This was quickly hauled back and another shot made with no better results, although a smaller line, No. 7, was substituted. The elevation of the gun for this shot was twenty degrees. At the third shot, the No. 9 Line was again used, but being wet and stiff with ice, it broke in the bend, close to the shot. The same line was now re-faked, not in the box, but on a tarpaulin spread upon the sand, and a fourth shot fired. This failed, as before. There being now two charges left in the heaver sack it was agreed to suspend operations until daylight. While thus waiting, a fire was built and the men busied themselves rearranging the lines for the renewal of operations.

Shortly after this as the lifesavers were about to fire the gun again they discovered a dark object in the water alongside the ship under the port quarter. This was at first taken for a piece of wreckage, but closer observation showed that it was a large boat, crowded with men. The crew had abandoned their ship. How long they had been in the boat will never be known, but as no signals were made after the firing of the second shot it is believed that the boat was lowered towards 5 o'clock when, with the rising of the tide, the sea began breaking over the deck. As the sequel proved, it is a pity they had not rather taken to the rigging. At the fifth and sixth shots the gun was given greater elevation. The first fire dropped the line short, as before, but the next time the line ranged well to the windward and lodged over the head stays. But it was only for a moment, as the line quickly slipped off into the sea.

The powder being now exhausted, Keeper Belanga, who directing the operations, decided to return to his station for a fresh supply and also for his surfboat, taking Surfman Stone and Ayers to assist him. The three men reached the station on foot soon after 8 o'clock. Belanga gave instructions about the boat, and after seeing to his powder he ran over to his house, but a stone's throw distance, and hurriedly asked for something to eat. Breakfast not being ready his wife set out some cold coffee and a piece of pie, which he hastily swallowed, and he then left for the wreck again, in his own beach cart, with a couple of dry shot lines, a canister of powder, and the medicine chest, leaving the boat to follow on its carriage. This was the last time his wife saw him alive. Mrs. Belanga relates a pathetic incident of this visit. With some anxiety she had asked her husband, as he stood at the table eating, what he proposed doing with the boat, as she well knew the sea was so rough. He replied that he intended boarding the ship at low water in case the lines failed; then, as he kissed her and passed out at the door, he added, "The worst has not yet come yet! I would give fifty dollars if the men were out of the boat." Notwithstanding his forebodings the brave fellow little thought that in a few short hours he would be borne back to that home a corpse.

In the meantime, while the rest of the lifesavers were awaiting his return, a miller named Oglesby had joined the party, and learning that the powder had given out offered them some sporting powder that he had purchased the day before. Surfman Barnes was therefore dispatched to the mill for it. Before the latter could return, however, or rather before a boy who overtook him on his way to the wreck on horseback, and to whom he gave the powder, could gallop down with it, Belanga arrived with his, and operations were resumed. An eight-ounce charge and one of the fresh dry lines were used, but the line failed to stand the too heavy charge and snapped close to the shot. The situation was now desperate. For the eight shot a line from the Dam Neck Mills Station was taken, and this also fell short; the projectile splashing into the water a few yards inshore of the ship. Thus out of eight shots the line had reached the vessel but once, when it lodged for a moment on the stays and slipped off. That the ship was within range of the gun was demonstrated by subsequent measurement, and the successive failures to establish communication is attributed to the improper elevation of the piece and the omission of the keeper to use the smaller or No. 4 Line, as he had been instructed to do in such

emergencies. Surfmen Ayers and Stone had now come up with the boat and preparations were made to go off. This was at 11 o'clock in the day. Belanga

picked the following men from the two crews as oarsmen, viz: George W. Stone, John H. Land, John T. Etheridge, and Frank Tedford, of his own station, and Joseph Spratley and James E. Belanga, of the Dam Neck Mills Station. The latter was his own brother, while Spratley and Tedford were related to him by marriage (brothers-in-law).

Although the tide had fallen off the sea was still bad; yet for all this there seemed an excellent prospect of a successful outcome to the hazardous undertaking. The boat got away from beach in a handsome style and was headed well to the windward in order to stem the current alongshore, and the crew responding with a will to the keeper's cheery "Drive her, boys! drive her!" the ship was soon reached. The German boat with its human freight still lay in the position in which it was first seen at early dawn, the rope which held it being attached to the ship's quarter. Scarcely a word was spoken as the two crews met. Belanga was the first to break the silence by hailing Captain Halberstadt with the inquiry, "How many men have you?" The captain replied, "Twenty-two." The keeper then called for seven sailors to jump into the surfboat, intending, doubtless, to land them all in three trips. It is said that the Germans were disposed to spring into the surfboat pell-mell, but a few words of restraint from the officers were sufficient, so excellent was the discipline, and but seven men, as called for, including the captain, were transferred to the station boat. These were immediately supplied with life-preservers carried for that purpose, and Belanga was on the point of turning his craft shoreward when suddenly an immense wave swept around the rear of the ship, combed over two boats which had tailed somewhat astern without the notice of the surfmen, swamped them and turned them completely over and the sea. The long-boat remained attached by its painter to the ship while the surfboat drifted away, bottom up, to the southward along the surf.

The scene at this time was appalling. Twenty-nine men were struggling for life in the storm-lashed icy waters and the people on shore unable to do aught for their deliverance. Those with life-preservers on had no difficulty in keeping afloat, and quite a number succeeded in gaining the bottom of the drifting boat. A few managed to reach the long-boat; others were carried seaward beyond the breakers and quickly drowned. A like fate ere long befell those who had clung to the ship's boat, as they one by one succumbed to the intense cold and were washed off. With temperature below the freezing point the struggle for life was an unequal one for the strongest, and before many minutes had elapsed more than half the men disappeared. A few of the Germans, the two Belanga brothers, and one or two others of the lifesaving crew maintained their positions upon the drifting boat until it was nearly half a mile from the ship and well inside the heaviest line of breakers, when they also began dropping off from exposure and exhaustion, some to sink out of sight, the others with what little strength they had left feebly striking out for the shore. Surfman Tedford one of the survivors, says that he clung to the boat as long as possible, when feeling that he must soon perish he loosened his grip and swam for the beach. It will be wondered what the party on shore were doing while this was happening. It was not much, it is true, but they appear to have done their best under the circumstances. Unfortunately there was no other boat at hand; but no such accident as this had been anticipated.

Barco and his men were standing in readiness to aid the surfboat in landing its first load when they were horrified at beholding the two boats capsize. In the excitement of the moment three of the party were dispatched in Belanga's cart to the Dam Neck Mills Station for the boat of that station. There could have been little hope of bringing it so great a distance in time to be of any service. There was, however, the bare possibility of doing so, and that seems to have justified the course taken. This left but six men, five of them members of the Service, and Oglesby, the miller. Under Barco's direction they followed down the shore, anxiously watching the people in the water, but powerless to render aid. They had thus gone nearly a mile to the south before any of the unfortunates were within reach. The first was John T. Etheride, of the Little Island Station. He was probably the youngest man in either of the boats. As soon as he came near enough some

of the party joined hands, and wading out to waist deep grasped him and dragged him ashore. Surfman Land was the second to approach, but before they could reach him he was seen to relax his efforts; his head fell forward upon his breast, and when drawn from the water he was quite dead. Surfman Tedford was the next man landed. He was unable to speak, although conscious and having the use of his limbs. His life-belt was removed, and with men rubbing his limbs he was supported in walking a short distance to quicken circulation, until he gave those assisting him to understand by signs that he could reach the station without further help. He got to within a few yards of the house and there fell prone upon the snow from exhaustion. Fortunately, his wife, who lives near the station, was on her way to the shore, having just learned of the dreadful accident. Her coming at that moment seems providential. Seeing her husband fall she hastened to his assistance and, with the help of another women, dragged him indoors to the station fire, where he soon revived.

After leaving Tedford, Keeper Barco turned his attention to Etheridge. Two of the party were endeavoring to bring him to, but it seemed a hopeless case; he was unconscious and appeared to be dying. The medicine-chest was at hand, but Keeper Belanga had taken the key in his pocket. It took but a moment, however, to burst it open with a boat-hook that had washed ashore, and an effort was made to administer a stimulant. This did not succeed, as the sufferer could not swallow, so after doing all that was possible by rubbing his limbs and using other means to induce warmth and start the blood into circulation, he was put on the boat carriage and hurried to the station, where the women took him in charge. Under their care he slowly recovered, and in a few hours could sit up. Keeper Belanga by this time had also been dragged from the water, some distance farther south. He was unconscious, his eyes were fixed and bloodshot and his breathing short and labored, indicating congestion. The life-belt was torn from his body and brandy sent for, but before it could be brought from the medicine-chest, a short distance away, the brave keeper's life ebbed away. He lived not more than three or four minutes after leaving the water. In fact, life was nearly gone when aid reached him. Surfman Etheridge declares that he owes his safety in a great measure to the dead keeper's assistance; the latter, as they swam in company towards the shore, encouraging him to hold out and helping him to remove his cumbersome long rubber boots, expressing his regret while doing so that he could not remove his own, which were held by straps or suspenders passed over his shoulders passed over his shoulders inside his oil skin coat and life-preserver, which he could not disengage. Could he have shaken the boots off he would have reached the shore sooner and doubtless been saved. He was an excellent swimmer.

The bodies of two of the German sailors were recovered shortly after Belanga's death, farther south; also the bodies of Surfmen Stone, Spratley, and James Belanga, all with belts on. The body of Captain Halberstadt, also wearing a life-belt, was washed ashore an hour or so later, just south of the Little Island Station, or three mile from the wreck. By that time the boat of the Dam Neck Mills Station had arrived, but it was to late; the sad affair was over. The bodies of the rest of the ships' company, save five, all without life-preservers, were recovered on the two following days several miles farther south, the last one being found thirteen miles from the wreck. Thus, out of twenty-nine men, but two escaped-Etheridge and Tedford. With the exception of the captain's and that of one passenger (Hollmann), the names of the Germans who perished were not ascertained, as the ship's papers were lost.

The names added by this melancholy disaster to the roll of heroes of the Service who have given up their lives that others might by their efforts be saved, are as follows: Keeper Able Belanga and Surfman George W. Stone and John H. Land, of the Little Island Station, and Surfman James E. Belanga and Joseph Spratley, of Dam Neck Mills. Each man left a family. The Imperial Government at Berlin has since, with great generosity, forwarded through the German minister at Washington a sum of money for distribution to these poor families; the two surviving surfmen also receiving substantial recognition from the same source. Under the beneficent provision of the act of Congress approved May 4, 1882, the widows and orphans of these men are the recipients for a period of two years of the amounts that would have been paid quarterly to each man respectively, had he lived and remained in the service. The body of Captain Halberstadt was interred in Baltimore, while the rest of the crew were given Christian burial in Norfolk, under the direction of Colonel William Lamb, ex-mayor of that city and at present acting as German vice-consul. Of the ship and cargo but little beyond a few hundred empty barrels was saved, the ship herself becoming a complete wreck.

**Dear On Scene Editor,**

Commandant (G–NRS–2)
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